REMARKS

Status of the Claims

Claims 1, 2, 4, 6, 7, 9 and 11-16 are currently pending in the application. Claims 1, 2, 4, 6, 7, 9 and 11-16 stand rejected. Claims 1, 6 and 13 have been amended as set forth herein. All amendments are made without prejudice or disclaimer. No new matter has been added by way of the present amendments. Specifically, the amendment to claims 1, 6 and 13, wherein the number 60 is replaced by the number 55 is supported by the specification at, for instance, page 4, line 6. Reconsideration is respectfully requested.

Rejections Under 35 U.S.C. § 103(a)

Claims 1, 2, 4, 6, 7, 9 and 11-16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wu, U.S. Patent No. 5,908,358 (hereinafter "Wu"), in view of Iwami et al., JP 2002-078824 (hereinafter, "Iwami et al."). (*See*, Office Action of September 28, 2006, at page 2, hereinafter "Office Action"). Applicant traverses the rejection as hereinafter set forth.

The Examiner states that Wu discloses or suggests a thermosetting urethane golf ball cover wherein the thermosetting urethane resin composition comprises an isocyanate group-terminated urethane prepolymer and a polyamine compound covering a core having a Young's modulus of from about 5000 to 100000 psi. (*Id.*). The Examiner admits that Wu does not disclose or suggest limiting the polyurethane to the types of isocyanates recited in the presently pending independent claims, *i.e.*, claim 1 recites, in part, "the isocyanate group-terminated urethane prepolymer contains an isocyanate component formed by at least one diisocyanate

compound selected from the group consisting of 4,4′-dicyclohexylmethane diisocyanate, cyclohexane diisocyanate and isophorone diisocyanate." (*Id.*).

However, the Examiner cites to Iwami et al. as disclosing or suggesting this limitation. (*Id.* at page 3). The Examiner states that Iwami et al. disclose or suggest "isocyanate group-terminated urethane prepolymer and a polyamine wherein the isocyanates are 4,4′-dicyclohexylmethane diisocyanate, isophorone diisocyanate, etc., and the polyamine desired is 4′-diaminodiphenylmethane and derivative thereof where 3,3′-diethyl-5,5′-dimethyl-4,4′-diaminodiphenylmethane is noted as being a derivative thereof." (*Id.*).

The Examiner then concludes it would have been obvious to one of ordinary skill in the art to combine the composition of Wu with the polyamine of Iwami et al. to achieve the presently claimed invention to improve thermal resistance, and to use the isocyanates of Iwami et al. to improve weatherability, water resistance and resilience. (*Id.*).

However, although Applicant does not agree that the disclosures of Wu and Iwami et al. disclose or suggest all of the limitations of the presently claimed invention, to expedite prosecution, independent claims 1, 6 and 13 have been amended, without prejudice or disclaimer, to recite that "the stiffness modulus and shore D hardness of the cover material satisfy the following equation: $2.0 \leq A/B \leq 5.0$, $40 \leq B \leq$ **55**." Thus, the golf ball cover of the present invention has a Shore D hardness (B) of 40 to **55** and the ratio of the stiffness modulus (A) to the hardness (B), that is, (A/B), falls within the range of 2.0 to 5.0, which provides the golf ball of the present invention with an improved abrasion resistance, improved shot feel, and improved flight performance balancing controllability. (*See*, for instance, specification at Table 2 and page 2, line 25 to page 3, line 17).

This limitation, now recited in amended claims 1, 6 and 13, is neither disclosed nor suggested by either Wu or Iwami et al., either when considered separately or in combination. Thus, the Examiner has failed to establish a *prima facie* case of obviousness with respect to amended independent claims 1, 6 and 13, as further explained, below.

The Examiner refers to a Young's modulus of 5,000 to 100,000 psi (34.5 MPa according to the Examiner) and a Shore D hardness of 51 to 58 in Wu, and argues that a modulus of at least 102 to 116 MPa would satisfy a ratio of the modulus to the hardness of 2.0 or more. (*See*, Office Action, at page 2).

Table 1 of Wu discloses several finished golf balls, the covers of which have a Shore D hardness of 50 (Tour Balata), 51 (Example 2), 58 (Example 1) and 59 (Professional). (*See*, Wu, at page 5). According to Table 1, the shear resistance of the cover having a hardness of 58 or 59 is, respectively, a rating of 1 (no marks, no damage) or 2 (marked, no cut), which suggests that a hardness of 58 to 59 improves shear resistance of the cover. (*Id.* and at column 9, lines 1-45).

However, the shear resistance of the cover having a hardness of 50 or 51 reveals, respectively, a rating of 6 (cover cuts and cover peels) or 1 (no marks, no damage), which suggests that hardness itself, being in the range of 50 to 51, does not correlate with, or is not related to, shear resistance of the cover.

Furthermore, Wu does not disclose or suggest any effect that would have been achieved if, as the Examiner argues, a ratio of the Young's modulus to the Shore D hardness of 2.0 or more had been investigated.

In contrast, in the presently claimed golf ball cover having a Shore D hardness (B) within a range of 40 to 55 (even if the presently claimed cover has a Shore D hardness of 51 or less, in

which the hardness of Wu does not correlate with shear resistance), if the ratio of the stiffness modulus (A) to the Shore D hardness (B), that is, (A/B), is in the range of 2.0 to 5.0, this improves not only the abrasion resistance of the cover, but also the controllability and shot feeling of the cover. (*See*, specification, disclosing the results of Ball Nos. 1, 2, 6 and 7 in Table 2).

Additionally, even if the cover of the present invention has a Shore D hardness of 59, wherein the Shore D hardness actually improves shear resistance, if the ratio of the stiffness modulus to the Shore D hardness (A/B) is outside of the range of 2.0 to 5.0, then the abrasion resistance, controllability and shot feeling would be detectably lowered. (*See*, specification, Ball No. 11, in Table 3).

Therefore, even if the Young's modulus and the Shore D hardness of Wu could be applied to a golf ball cover as presently claimed, the unexpected and remarkable results of the presently claimed invention would not be achieved unless the cover were made to have a Shore D hardness of 40 to 55 and unless the ratio of the stiffness modulus to the Shore D hardness were made to be within the range of 2.0 to 5.0. However, Wu and even Iwami et al., fail to recognize this limitation or the importance thereof to the unexpected qualities achieved in the presently claimed invention.

Thus, even if the Young's modulus and the Shore D hardness of the cover in Wu were combined with the isocyanates and the polyamines disclosed or suggested in the urethane resin of the cover of Iwami et al., the resultant combination would still not achieve the unexpectedly superior properties of the cover of the presently claimed invention.

For at least these reasons, Applicants respectfully request reconsideration and withdrawal of the obviousness rejection of claims 1, 2, 4, 6, 7, 9 and 11-16.

ENTRY OF AMENDMENTS

The amendments to the claims should be entered by the Examiner because the amendments are supported by the as-filed specification and do not add any new matter to the application. Additionally, the amendments should be entered since they comply with requirements as to form, and place the application in condition for allowance. Further, the amendments do not raise new issues or require a further search since the amendments incorporate elements from dependent claims into independent claims and/or are supported by the as-filed specification. Finally, if the Examiner determines that the amendments do not place the application in condition for allowance, entry is respectfully requested since they certainly remove issues for appeal.

CONCLUSION

In view of the above amendment, applicant believes the pending application is in condition for allowance. If the Examiner has any questions or comments, please contact Thomas J. Siepmann, Ph.D., Registration No 57,374 at the offices of Birch, Stewart, Kolasch & Birch, LLP.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

Dated: December 28, 2006

Respectfully submitted,

By _____ #32,868

Andrew D. Meikle
Registration No.: 32,868
BIRCH, STEWART, KOLASCH & BIRCH, LLP
8110 Gatehouse Road
Suite 100 East
P.O. Box 747
Falls Church, Virginia 22040-0747
(703) 205-8000
Attorney for Applicant

ADM/TJS/bsh